Patent Claims

1. Thermoplastic moulding compositions containing polycarbonate and/or polyester carbonate, graft polymer, phosphazenes and inorganic powder having an average particle diameter of less than or equal to 200 nm.

2. Thermoplastic moulding compositions according to claim 1 containing

   A) 40 to 99 parts by weight of aromatic polycarbonate and/or polyester carbonate

   B) 0.5 to 60 parts by weight of graft polymer of

   B.1) 5 to 95 wt.% of one or more vinyl monomers on

   B.2) 95 to 5 wt.% of one or more grafting backbones having a glass transition temperature of <10°C,

   C) 0 to 45 parts by weight of at least one thermoplastic polymer selected from the group comprising vinyl (co)polymers and polyalkylene terephthalates,

   D) 0.1 to 50 parts by weight of at least one component selected from the group comprising phosphazenes of the formulae

(Ia),

$$
\begin{array}{c}
R \\
R-P-N \\
N \quad\quad P-R \\
P=N \quad R \\
R \quad R \quad k
\end{array}
$$
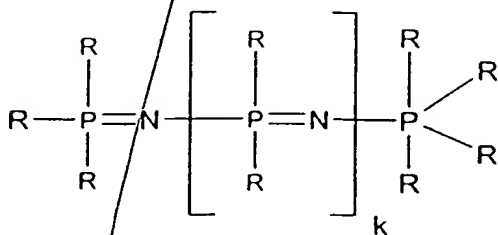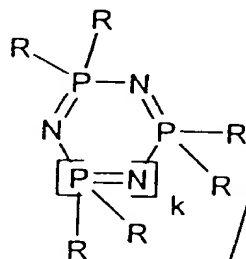
(Ib),

in which

R is in each case identical or different and denotes amino, C_1 to C_8 alkyl, in each case optionally halogenated, or C_1 to C_8 alkoxy, C_5 to C_6 cycloalkyl, C_6 to C_{20} aryl or C_7 to C_{12} aralkyl, in each case optionally substituted by alkyl and/or halogen,

k denotes 0 or a number from 1 to 15,

E) 0.5 to 40 parts by weight of finely divided inorganic powder having an average particle diameter of less than or equal to 200 nm and

F) 0 to 5 parts by weight of fluorinated polyolefin.

3. Moulding compositions according to claim 2 ~~claims 1 and 2~~ containing

60 to 98.5 parts by weight of A,

1 to 40 parts by weight of B,

0 to 30 parts by weight of C,

1 to 18 parts by weight of D,

1 to 25 parts by weight of E,

0.15 to 1 part by weight of F.

4. Moulding compositions according to ~~claims 1 to 3,~~ *claim 2,* containing 2 to 25 parts by weight of C.

5. Moulding compositions according to ~~claims 1 to 4~~ *claim 2* containing 5 to 25 parts by weight of D.

6. Moulding compositions according to ~~the preceding claims,~~ *claim 2* wherein vinyl monomers B.1 are mixtures prepared from

B.1.1 50 to 99 parts by weight of vinyl aromatics and/or ring-substituted vinyl aromatics and/or methacrylic acid (C_1-C_8)-alkyl esters and

B.1.2 1 to 50 parts by weight of vinyl cyanides and/or (meth)acrylic acid (C_1-C_8)-alkyl esters and/or derivatives of unsaturated carboxylic acids.

7. Moulding compositions according to ~~the preceding claims,~~ *claim 2* wherein the grafting backbone is selected from at least one rubber from the group comprising diene rubbers, EP(D)M rubbers, acrylate, polyurethane, silicone, chloroprene and ethylene/vinyl acetate rubbers.

8. Moulding compositions according to ~~the preceding claims,~~ *claim 2* wherein component D is selected from the group consisting of propoxyphosphazene, phenoxyphosphazene, methylphenoxyphosphazene, aminophosphazene and fluoroalkylphosphazenes.

9. Moulding compositions according to ~~the preceding claims,~~ *claim 2* wherein component E is selected from among at least one polar compound of one or more metals of main groups 1 to 5 or subgroups 1 to 8 of the periodic system with at least one element selected from among oxygen, hydrogen, sulfur, phosphorus, boron, carbon, nitrogen or silicon.

10. Moulding compositions according to claim 9, wherein component E is selected from among at least one polar compound of one or more metals of main groups 2 to 5 or subgroups 4 to 8 of the periodic system with at least one element selected from among oxygen, hydrogen, sulfur, phosphorus, boron, carbon, nitrogen or silicon.

11. Moulding compositions according to claim 10, wherein component E is selected from among at least one polar compound of one or more metals of main groups 3 to 5 or subgroups 4 to 8 of the periodic system with at least one element selected from among oxygen, hydrogen, sulfur, phosphorus, boron, carbon, nitrogen or silicon.

12. Moulding compositions according to claim 2 ~~the preceding claims~~, wherein component E is selected from ~~among at least one~~ at least one member of the group consisting of oxide, hydroxide, hydrous oxide, sulfate, sulfite, sulfide, carbonate, carbide, nitrate, nitrite, nitride, borate, silicate, phosphate, hydride, phosphite and phosphonate.

13. Moulding compositions according to claim 2 ~~the preceding claims~~, wherein component E is selected from among oxides, phosphates and hydroxides.

14. Moulding compositions according to claim 13 ~~the preceding claims~~, wherein component E is selected from among TiO_2, SiO_2, SnO_2, ZnO, ZnS, boehmite, ZrO_2, Al_2O_3, aluminium phosphates, iron oxides, TiN, WC, AlO(OH), Sb_2O_3, iron oxides, Na_2SO_4, vanadium oxides, zinc borate, silicates such as Al silicates, Mg silicates, 1-, 2- or 3-dimensional silicates, mixtures thereof and doped compounds.

15. Moulding compositions according to claim 2 ~~the preceding claims~~, wherein component E is selected from among hydrated aluminium oxides, TiO_2 and mixtures thereof.

16. Moulding compositions according to ~~the preceding claims~~ *claim 2, further* containing at least one additive selected from the group comprising lubricants and mould release agents, nucleating agents, antistatic agents, stabilisers, dyes and pigments.

5   17. Moulding compositions according to ~~the preceding claims~~ *claim 2* containing further flame retardants which differ from component D.

18. Process for the production of moulding compositions according to ~~claim 1~~ *claim 2*, wherein components A to E and optionally further additives are mixed and melt-compounded.

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19. Use of the moulding compositions according to claim 1 for the production of mouldings.

15   20. Mouldings produced from moulding compositions according to ~~claims 1 to 17~~ *claim 1*.

21. Casing parts according to claim 20.

Flame-resistant polycarbonate/ABS moulding compositions

Abstract

The present invention relates to polycarbonate/ABS moulding compositions containing phosphazenes and inorganic nanoparticles, which compounds exhibit excellent flameproofing and very good mechanical properties.